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REMARKS

Applicants previously presented claims 1-3, 5-16, 18-22, 24 and 25 for examination. In the above-identified Office Action, the Examiner has rejected all of the claims. Applicants appreciate the comments provided by the Examiner in the Office Action. By this amendment, Applicants have amended the specification; amended claims 1, 5, 6, 14, 16, 19, 21 and 25; and added new claim 26. Accordingly, claims 1-3, 5-16, 18-22, and 24-26 remain pending. Applicants respectfully request that the Examiner reconsider the application in light of the amendments and the remarks expressed herein.

Support for amendments

Claim 1 has been amended to include the features of "wherein the beam direction depends on the position of the electronic device, and wherein as the position of the electronic device changes, the beam direction can automatically change". These features are supported in numerous places of the specification, such as the following:

The direction input can be a position reference, such as a position for the directional speaker 226 (relative to its housing), the position of a person desirous of hearing the audio sound, or the position of an external electronic device (e.g., remote controller). Hence, the beam-attribute control unit 224 receives the direction input and determines the direction of the audio output. (paragraph 44)

There are also other types of beam attribute inputs. For example, the inputs can be the position 508, and the size 510 of the beam. The position input can pertain to the position of a person desirous of hearing the audio sound, or the position of an electronic device (e.g., remote controller). (paragraph 54)

Here, in accordance with one embodiment, the audio apparatus has associated with it a remote control device, and the remote control device can provide the beam attributes. (paragraph 62)

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Still further, the propagation direction of the ultrasonic beam, such as the beam 1006 in FIG. 10A, the beam 1040 in FIG. 10B or the beam 1106 in FIG. 11A, can be changed by electrical and/or mechanical mechanisms. (paragraph 103)

The movement of the spherical surface 1002 to adjust the delivery direction can track user movement. This tracking can be performed dynamically. This can be done through different mechanisms, such as by GPS or other triangulation techniques. The user's position is fed back to or calculated by the directional audio apparatus. The position can then become a beam attribute input. The beam-attribute control unit would convert the input into the appropriate control signals to adjust the delivery direction of the audio output. The movement of the spherical surface 1002 can also be in response to a user input. In other words, the movement or positioning of the beam 1006 can be done automatically or at the instruction of the user. (paragraph 104)

A number of attributes of the constrained audio outputs can be adjusted, either by a user or automatically and dynamically based on certain monitored or tracked measurements, such as the position of the user. (paragraph 119)

Claim 16 has been amended to state that in view of the beam-attribute input, the ultrasonic frequency of the ultrasonic signals is increased, which increases the attenuation and the width of the beam of the directionally constrained audio. These features are supported in numerous places of the specification, for example, in its paragraphs 89 and 90.

103 Rejections regarding claim 1 and its dependent claims 2-3, 5-15 and 25

Claim 1 and its dependent claims 2-3, 5-15 and 25 were rejected under 35 U.S.C. 103(a) as being unpatentable as follows:

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- (a) claims 1-3, 5-7, 9, 13 and 14 over Pompei (US Pub. No. 2001/0007591) in view of Takahashi et al. (US Pat. No. 6,643,377, hereinafter referred to as "Takahashi");
- (b) claim 8 over Pompei in view of Takahashi in further view of Norris et al. (US Pub. No. 2004/0052387 A1, hereinafter referred to as "Norris");
- (c) claims 10 and 12 over Pompei in view of Takahashi in further view of Wiser et al. (US Pub. No. 2003/0009248 A1, hereinafter "Wiser");
- (d) claim 11 over Pompei in view of Takahashi in further view of Wiser and Brain (Brain; Marshall, How USB Ports Work, October 11, 2002, www.howstuffworks.com/usb);
- (e) claim 15 over Pompei in view of Takahashi in further view of Tanaka et al. (US Pat. No. 4,823,908, hereinafter "Tanaka"); and
- (f) claim 25 over Pompei in view of Tanaka in further view of Norris.

Applicants respectfully disagree with the rejections.

All of the 103(a) rejections regarding claim 1 and its dependent claims are based on combining Pompei with one or more other references. Initially, it is submitted that there is no motivation to combine any of these references in the manner that the Office Action proposes.

No teaching or suggestion of a beam-attribute control unit of an ultrasonic directional speaker receiving wireless inputs from an electronic device to control attributes

The Office Action, in the second full paragraph on page 5, argued that Pompei teaches a computerized beam steering control device 124, so it would have been obvious "to use the steering control device as a remote control for controlling attributes of ultrasonic output as that disclosed by Takahashi et al. (commander, Takahashi et al., col. 4, lines 43-51) because doing so would have yielded a predictable result." Applicants respectfully disagree.

Pompei has no structural or physical description regarding its "computerized beam steering control device 124" other than showing it in its Fig.

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1 as a part of its parametric audio system 100. Pompei has not described where the device is located, or how it is made, other than it is a beam steering control device that is computerized. As to Takahashi's commander, it is "for transmitting a rotation command for rotating the left speaker 102 and the right speaker 103¹". It is not clear how to combine Pompei's beam-steering device with Takahashi's speaker-rotating commander, let alone yielding a "predictable result."

Thus, there is no teaching or suggestion of a beam-attribute control unit of an ultrasonic directional speaker receiving wireless inputs from an electronic device to control the attribute, as recited in claim 1.

No teaching or suggestion of beam direction being dependent on a position of an electronic device

The Office Action, in the first full paragraph on page 5, argued that "the attribute controlled influences the direction of the ultrasonic output of said directional speaker" citing paragraph 39 in Pompei as support. In that section, Pompei teaches its delay circuit 120 applying phase shifting "for electronically steering audio beams toward desired locations along selected projection paths, without requiring mechanical motion of the acoustic transducer array 122." At best, the teaching is on a delay circuit steering audio beams. There is no teaching or suggestion that beam direction of an ultrasonic beam can depend on a position of an electronic device.

The Office Action, in the last paragraph on page 6 and the first paragraph on page 7, also argued that Pompei in view of Takahashi (a) teach an environmental adjustment unit modifying the audio signals based on information from the environment of a portable device, (b) with the information being based on a position of the portable device. The support the Office Action cited was paragraph 44 in Pompei. Applicants respectfully disagree.

In its paragraph 44, Pompei teaches its parametric audio system 100 includes a temperature/humidity control device 130 to maintain "desired atmospheric conditions along the path traversed by the ultrasonic beam ... to

¹ Col. 4, lines 43-45 of Takahashi.

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minimize absorption and ... to increase the efficiency of demodulation." Based on paragraph 44, the Office Action also alleged that "the preexisting atmospheric conditions are based on the position of the device."

Again, there is no teaching or suggestion in paragraph 44 of Pompei regarding a beam direction depending on a position of an electronic device, as recited in claim 1.

No teaching or suggestion of being able to automatically change beam direction as the position of an electronic device changes

The Office Action, in the last paragraph on page 12, argued that in view of Pompei and Tanaka, "the beam attribute input being received is automatically provided, not based on an input entered by the user". The Office Action again cited paragraph 44 in Pompei, alleging "a thermostatically controlled cooler, or a dehumidifier that maintains desired atmospheric conditions along the path traversed by the ultrasonic beam based on the preexisting atmospheric conditions".

At best, that section in Pompei teaches preexisting atmospheric conditions changing power level or performance. There is, however, no teaching or suggestion of being able to automatically change the beam direction as the position of an electronic device changes, as recited in claim 1.

Hence it is submitted that Pompei, Takahashi, Norris, Wiser, Brain, and Tanaka, alone or in any combination do not teach or suggest claim 1, or its dependent claims 2-3, 5-15 and 25, singly or in combination.

103 Rejections regarding claim 16 and its dependent claims 18-22 and 24

Claim 16 and its dependent claims 18-22 and 24 were rejected under 35 U.S.C. 103(a) as being unpatentable as follows:

- (a) claims 16, 18-20 and 22-24 over Pompei in view of Tanaka; and
- (b) claim 21 over Pompei in view of Tanaka and further in view of Fosgate et al. (US Pat. No. 5,666,424, hereinafter "Fosgate").

Applicants respectfully disagree with the rejections.

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All of the 103(a) rejections regarding claim 16 and its dependent claims are again based on combining Pompei with one or more other references. Initially, it is submitted that there is no motivation to combine any of these references in the manner that the Office Action proposes.

No teaching or suggestion to increase ultrasonic frequency to increase beam width of directionally constrained audio

Not only that the cited references should not be combined as suggested, there is also no teaching or suggestion in Pompei, Fosgate and Tanaka, singly or in any combination, of increasing the ultrasonic frequency to increase the beam width of the directionally constrained audio, as recited in claim 16. Hence it is submitted that Pompei, Fosgate and Tanaka, alone or in any combination do not teach or suggest claim 16, or its dependent claims 18-22 and 24, singly or in combination.

Based on the foregoing, it is submitted that the claims 1-3, 5-16, 18-22, and 24-25 are patentably distinct from all the cited references. Further the independent or the dependent claims recite additional elements which when taken in the context of the claimed invention further patentably distinguish the art of record. The additional limitations recited in the independent claims or the dependent claims are not further discussed as the above-discussed limitations are clearly sufficient to distinguish the claimed invention from the cited references. Thus, it is respectfully requested that the Examiner withdraw the rejection of claims 1-3, 5-16, 18-22, and 24-25 under 35 USC §103(a).

Summary

It is submitted that claims 1-3, 5-16, 18-22, 24 and 25, together with the newly added claim 26, are patentably distinct from the cited references. Reconsideration of the application and an early Notice of Allowance are earnestly solicited.

In the event that the Examiner, upon reconsideration, determines that an action other than an allowance is appropriate, the Examiner is requested and

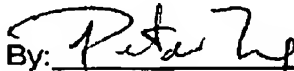
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authorized to telephone Applicants' representative below prior to taking such action, if the Examiner feels that such a telephone call will advance the prosecution of the present application.

If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

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